

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1           Claim 1: (currently amended):       A computer-implemented method, comprising  
2   ~~computer data signal embodied in a carrier wave for a micromagnetization analysis and used to direct~~  
3   ~~a computer to perform the processes of:~~

4           receiving an input of a parameter of a micromagnetization vector assigned to a center of a  
5   divided microelement of an area to be analyzed, and a parameter of vector potential assigned to a  
6   side or node of the microelement;

7           generating a magnetic field equation for providing an external magnetic field for  
8   micromagnetization using the input parameters, and initializing a time;

9           obtaining a solution of the magnetic field equation;

10          obtaining a time integral of the ~~LLG~~ Landau Lifshitz Gilbert (LLG) equation using the  
11   solution as an external magnetic field for an unstationary LLG equation;

12          determining whether or not micromagnetization obtained by the time integral satisfies a  
13   convergence condition;

14          correcting the magnetic field equation using the obtained micromagnetization when the  
15   convergence condition is not satisfied, and stepwise increasing the time; and

16 repeating the process of obtaining a solution of the magnetic field equation and subsequent  
17 processes.

1 Claim 2 (currently amended): The ~~signal~~ computer-implemented method according  
2 to claim 1, further comprising ~~a process of~~  
3 obtaining a magnetic field using the micromagnetization obtained by the time integral of the  
4 LLG equation when the convergence condition is satisfied.

1 Claim 3 (currently amended): The ~~signal~~ computer-implemented method according to claim  
2 1, wherein  
3 said magnetic field equation is a stationary magnetic field equation using vector potential.

1 Claim 4 (currently amended): The ~~signal~~ computer-implemented method according to claim  
2 1, wherein  
3 said magnetic field equation is an unstationary magnetic field equation.

1 Claim 5 (currently amended): The ~~signal~~ computer-implemented method according to claim  
2 1, wherein  
3 in the process of obtaining the time integral of the LLG equation, a product of a difference  
4 between micromagnetization vector assigned to a target element and micromagnetization vector

5 assigned to an adjacent element and an exchange interaction coefficient is set as an exchanged  
6 magnetic field by an exchange interaction with the adjacent element.

Claim 6 (canceled).

1 Claim 7 (currently amended): The ~~signal~~ computer-implemented method according  
2 to claim 1, wherein  
3 in the process of obtaining a time integral of the LLG equation, as an exchanged magnetic  
4 field for an element contacting a boundary of an element group formed by a plurality of elements,  
5 there is set a product of an externally specified one of an exchange interaction coefficient assigned  
6 to the boundary and an exchange interaction coefficient assigned to the element group, and a  
7 difference between micromagnetization vector assigned to a target element and micromagnetization  
8 vector assigned to an adjacent element.

Claim 8 (canceled).

1 Claim 9 (currently amended): A micromagnetization analyzing apparatus, comprising:  
2 an input unit receiving an input of a parameter of a micromagnetization vector assigned to  
3 a center of a divided microelement of an area to be analyzed, and a parameter of vector potential  
4 assigned to a side or node of the microelement;

5           a magnetic field equation generation unit generating a magnetic field equation for providing  
6           an external magnetic field for micromagnetization using the input parameters, and initializing a time;  
7           a unit obtaining a solution of the magnetic field equation;  
8           a unit obtaining a time integral of ~~the LLG~~ Landau Lifshitz Gilbert (LLG) equation using the  
9           solution as an external magnetic field for an unstationary LLG equation;  
10          a convergence condition determination unit determining whether or not micromagnetization  
11          obtained by the time integral satisfies a convergence condition;  
12          a magnetic field equation correction unit correcting the magnetic field equation using the  
13          obtained micromagnetization when the convergence condition is not satisfied, and stepwise  
14          increasing the time; and  
15          a control unit repeating the operation of said unit obtaining a solution of the magnetic field  
16          equation and subsequent units using the corrected magnetic field equation.

1           Claim 10 (original):   The apparatus according to claim 9, further comprising  
2           a magnetic field calculation unit obtaining a magnetic field by micromagnetization using  
3           micromagnetization obtained by the time integral of the LLG equation when the convergence  
4           condition is satisfied.

1           Claim 11 (currently amended):       A micromagnetization analyzing apparatus, comprising:  
2           input unit means for receiving an input of a parameter of a micromagnetization vector

3 assigned to a center of a divided microelement of an area to be analyzed, and a parameter of vector  
4 potential assigned to a side or node of the microelement;

5 magnetic field equation generation means for generating a magnetic field equation for  
6 providing an external magnetic field for micromagnetization using the input parameters, and  
7 initializing a time;

8 means for obtaining a solution of the magnetic field equation;

9 means for obtaining a time integral of the ~~LLG~~ Landau Lifshitz Gilbert (LLG) equation using  
10 the solution as an external magnetic field for an unstationary LLG equation;

11 convergence condition determination means for determining whether or not  
12 micromagnetization obtained by the time integral satisfies a convergence condition;

13 magnetic field equation correction means for correcting the magnetic field equation using the  
14 obtained micromagnetization when the convergence condition is not satisfied, and stepwise  
15 increasing the time; and

16 control means for repeating the operation of said means obtaining a solution of the magnetic  
17 field equation and subsequent means using the corrected magnetic field equation.

1 Claim 12 (original): The apparatus according to claim 9, wherein

2 said magnetic field equation is a stationary magnetic field equation using vector potential.

1           Claim 13 (original): The apparatus according to claim 9, wherein  
2           said magnetic field equation is an unstationary magnetic field equation.

1           Claim 14 (original): The apparatus according to claim 9, wherein  
2           the unit obtaining the time integral of the LLG equation sets a product of a difference  
3           between micromagnetization vector assigned to a target element and micromagnetization vector  
4           assigned to an adjacent element and an exchange interaction coefficient is set as an exchanged  
5           magnetic field by an exchange interaction with the adjacent element.

          Claim 15 (canceled).

1           Claim 16 (original): The signal according to claim 9, wherein  
2           the unit obtaining the time integral of the LLG equation sets a product of an externally  
3           specified one of an exchange interaction coefficient assigned to a boundary of an element group  
4           formed by a plurality of elements and an exchange interaction coefficient assigned to the element  
5           group, and a difference between micromagnetization vector assigned to a target element and  
6           micromagnetization vector assigned to an adjacent element as an exchanged magnetic field for an  
7           element contacting the boundary.

1           Claim 17 (original): The apparatus according to claim 9, wherein  
2           the unit obtaining the time integral of the LLG equation, for an element contacting a  
3           boundary of an element group formed by a plurality of elements, sets a value of an exchanged  
4           magnetic field by using either an externally received input value of an exchanged magnetic field  
5           assigned to the boundary, or an input value of an exchange interaction coefficient which depend on  
6           a size of an element and which is multiplied by the different between micromagnetization vector  
7           assigned to a target element and micromagnetization vector assigned to an adjacent element to obtain  
8           the exchanged magnetic field.

1           Claim 18: (new): A storage medium having stored thereon a set of instructions for  
2           implementing a method, said set of instructions comprising at least one instruction for:  
3           receiving an input of a parameter of a micromagnetization vector assigned to a center of a  
4           divided microelement of an area to be analyzed, and a parameter of vector potential assigned to a  
5           side or node of the microelement;  
6           generating a magnetic field equation for providing an external magnetic field for  
7           micromagnetization using the input parameters, and initializing a time;  
8           obtaining a solution of the magnetic field equation;  
9           obtaining a time integral of Landau Lifshitz Gilbert (LLG) equation using the solution as an  
10          external magnetic field for an unstationary Landau Lifshitz Gilbert (LLG) equation;  
11          determining whether or not micromagnetization obtained by the time integral satisfies a

12 convergence condition;

13           correcting the magnetic field equation using the obtained micromagnetization when the  
14 convergence condition is not satisfied, and stepwise increasing the time; and

15           repeating the process of obtaining a solution of the magnetic field equation and subsequent  
16 processes.

1           Claim 19 (new):       The storage medium of claim 18, said set of instructions further  
2 comprising at least one instruction for:

3           obtaining a magnetic field using the micromagnetization obtained by the time integral of the  
4 Landau Lifshitz Gilbert (LLG) equation when the convergence condition is satisfied.

1           Claim 20 (new):       The storage medium of claim 18, wherein  
2 said magnetic field equation is a stationary magnetic field equation using vector potential.

1           Claim 21 (new):       The storage medium of claim 18, wherein  
2 said magnetic field equation is an unstationary magnetic field equation.

1           Claim 22 (new):       The storage medium of claim 18, wherein  
2           in the process of obtaining the time integral of the Landau Lifshitz Gilbert (LLG) equation,  
3 a product of a difference between micromagnetization vector assigned to a target element and



4 micromagnetization vector assigned to an adjacent element and an exchange interaction coefficient  
5 is set as an exchanged magnetic field by an exchange interaction with the adjacent element.

1 Claim 23 (new): The storage medium of claim 18, wherein  
2 in the process of obtaining a time integral of the Landau Lifshitz Gilbert (LLG) equation, as  
3 an exchanged magnetic field for an element contacting a boundary of an element group formed by  
4 a plurality of elements, there is set a product of an externally specified one of an exchange interaction  
5 coefficient assigned to the boundary and an exchange interaction coefficient assigned to the element  
6 group, and a difference between micromagnetization vector assigned to a target element and  
7 micromagnetization vector assigned to an adjacent element.

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